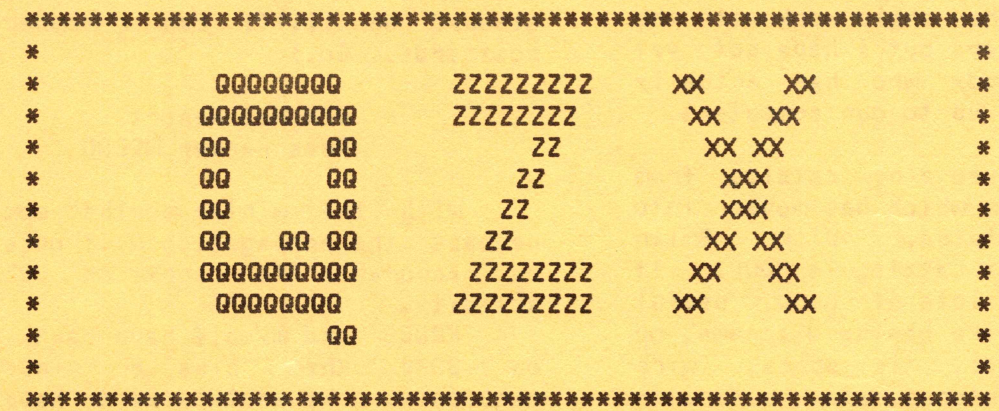
QQQQQQQQ ZZZZZZZZZ XX XX
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The Journal Covering Amateur Radio & Sinclair Computers
ZX-80; Micro-Ace; ZX81; T/S 1000, 1500, & 2068

2025 O'Donnell Drive
K5XY Las Cruces, New Mexico W4GHV/5
Alex. F. Burr 88001 Bo Barry
Publisher Editor

Volume 3 Number 11 ($1.50/issue) October 1985

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COMING UP: NOVEMBER ISSUE (IN NOVEMBER)!!

PUBLISHER'S NOTES

Radio Shack has come up with some more cheap good keyboards, this time from Atari. A quick look indicates that they use SPST keys so they shold work with the T/S and ZX computers but I have not yet heard from anybody who has actually hooked one of them up to our computers.

I just received a new catalog from an Australian firm which has moved into the United States, Dick Smith Electronics. That catalog is GOOD. It contains lots and lots of good, useful electronics data like basing diagrams, op amp characteristics, ic specs, wire tables, and even antenna data. I finally found out how to read the values on the brown silver mica capacitors from the pages of data included with the catalog. The prices look reasonable too and they welcome mail orders. Write Dick Smith Electronics, Box 8021, Redwood City, CA 94063.

Bo's Teachers Pet bulletin board has a new 'look', it is now a member of the Fido Network of bulletin boards. It is running on an XT clone @ 300/1200/2400 baud and has message & file areas devoted to QZX & Timex/Sinclair computers. Areas devoted to other computers are also available. While no programs are available for downloading in that area at present, readers are welcome to check it out, and read the 'mail' that gets sent between the editor and publisher in preparation of QZX. You will be able to get an idea of how far behind schedule we are, by checking in. Feel free to upload articles & programs. Upload no Master Card or telephone credit card numbers please! We will have more details on the Fido network later. If you have a local Fido BBS, you can send QZX mail by sending it to net/node 15/1006. Otherwise you will have to dial directly to 505-646-5194.

Crazybug Winner

The winner of the Crazybug cartridge offered in the August issue of QZX is Jim Henderson, WB9KNF. His card was the third to arrive and the only one to arrive that day. He had bought one of the T/S 2068's and is enjoying it very much. It goes with his ZX81 and T/S1000 both of which have been expanded to 16K and are used with a 2040 printer. He is anxious to get one of his machines on RTTY to go with the new ASCII and RTTY repeater being installed. I hope he gets them going soon because he surely does not write many post cards. (The card he used was an old one with only 3 cents stamped on it.)(I can remember penny postcards.. Ed.)

QZX Net Report
Russ Parker W9CQD

With the winter months coming on perhaps the propagation will once again be favorable to carry on QZX NET activity.

K0QQS and myself have been talking on 3830 Khz, plus or minus QRM, regularly. We would like to have others join us. Perhaps we can once again have a good exchange of information on the ham bands.

We have been meeting Tuesday and Friday evenings at 9:30 local time. If you do not hear anyone, call QZX and see if you can raise someone.

Also I would like to know if anyone knows of any nets operating with any consistancy. I have listened on some of the old frequencies, but have not heard anything.

With many people having upgraded their equipment, I'm sure an exchange of information would be very helpful.

So let's all try to join in.

See you on 3830. 73.

Cheap QL's

Sunset Electronics, 2254 Taraval Street, San Francisco, CA is taking orders for $300 QL's. No mention of delivery date or origin was made.

Error in Series

W7FGQ writes that his program on Series Line Matching Sections, which appeared in the August QZX, contained a misprint. Line 660 should read "L2(FT)" in the middle of the first part instead of the "L1(FT)" shown. He also enclosed a printer copy of the screen display, with a sample input, as it could help anyone that has entered the program in their T/S 1000 and is now wondering if it works all right.

```
ENTER LINE IMPEDANCE ZO      50
ENTER SECTION IMPEDANCE Z1   75
ENTER LOAD IMPEDANCE RL      18.9
ENTER REACTANCE XL (JXL)     -33
ENTER FREQUENCY F, MHZ       7.17
```

```
ENTER L1 VELOCITY FACTOR     0.8
ENTER L2 VELOCITY FACTOR     0.66

     L1 (FT) =       -7.648
     L1 (+180) FT = 47.247
     L2 (FT) =       12.699
TO RUN AGAIN, PRESS ANY KEY
```

QZX Ups Price

Fortunately we do not yet have to increase everybody's subscription rate, but we do have to increase the rates for those overseas. The last postal rate increase for overseas mail was even higher than for domestic mail. The envelopes required for overseas mailing move QZX into a heavier, more expensive class so that on the average it costs $13 more per year to send QZX to countries outside North America. Surface mail is just too slow (up to six months for Asia) and uncertain. The cash flow so far this year has been $180 in the wrong direction, so that we can no longer subsidize overseas subscriptions. Therefor, effective immediately, the subscription rate for addresses not in Canada, Mexico, or the United States will be $25. Current subscribers who wish to do so can renew for one year at the old rate of $19 in US funds drawn on a US Bank if they do it in 1985. Subscribers in Europe can probably save money by contacting Hans p Eckert, Box 119, S-813 00, Hofors, Sweden who runs a Euopean QZX subscription service.

QZX FRIENDS

W5GDL -- Cleet has just returned from a long vacation and is reactivating his ZX81, two T/S 1000's, and his T/S 1500. He says he also has a Brother 44 printer but has not yet gotten it interfaced with the computers.

W7FGQ -- Rudy says that he especially liked W6ISO's Log Yagi program. He was able to replicate his screen results exactly.

W4LVY -- George likes QZX so much that he moved to Las Cruces so he could get his next issue on time. (Well, not exactly on time.. Ed.)

N9BBN --John writes that he is interested in packet radio and that he is working on an improved version of his M-LOG program.

W4KVV -- Hugh writes the QZX keeps him in contact with excellent TIMEX 1000 programmers and keeps the computer alive.

UNCLASSIFIED ADS

WANTED: UNCLASSIFIED ADS for publication in QZX. Cost is 1 cent for each keystroke (characters, blanks, etc.). Payment must be included with order. This is an excellent way to sell your program or unwanted equipment, ask for help, or find a specific program. Send your ad with payment to QZX, 2025 O'Donnell, Las Cruces, NM 88001.

FOR SALE: CWSS users! MLI 2.0 premits QSK operation without prompting and can save Rx text for review on the screen or hard copu. Send $12.50 for MLI 2.0 or SASE for info sheet. John McGinley N9BBN/203 Milwaukee St./Mauston, WI 53948

FOR SALE: Timex Sinclair 2040 personal printer paper for 3 roll packs at $1.50, 4 roll packs by Labelon for $2.00, please include $2.00 for UPS shipping. Send to Gale Johnson WB9NRK, 1331 Bellevue Lot 371, Green Bay, Wis. 54302.

WANTED: All '83 & JAN, FEB, JUN '84 issues QZX. Also "MACHINE CODE DEVELOPMENT SYSTEM (Part I) R-E Jan '85. Will pay photocopy and postage cost. Pse contact me: G. GARCIA, Cabildo 587, (5521) Mendoza, ARGENTINE.

WANTED: Need badly... A manual and any info on a piece of gear called KRADLE for TS1000. Please contact D. Smith P.O. Box 578, Hemet, CA. 92343. Please send price. All letters will be answered.

TIMEX 2068 SPACE-BAR MODIFICATION

by Frank Bouldin (W5GAA)
--NEWSLETTER Technical Editor--
Fort Worth TIMEX/SINCLAIR User's Group

CAUTION: The author highly recommends that the following procedure be studied very carefully before making a decision to proceed with this modification. As pointed out in paragraph 7 below, EXTREME CAUTION must be exercised when disassembling the keyboard module. If any doubt exists in the ability to perform the modification, it probably should not be attempted. To date, the author has modified five computers using the following checklist with no undue difficulty.

BACKGROUND

Among the more disconcerting design deficiencies of the 2068, as pointed out in various reviews of the computer after it was placed on the market by TIMEX in late 1983, was that the extreme ends of the space-bar are "dead"; if one presses either end while rapidly keying in text, spaces between words often do not register---thus requiring frequent delete/backspacing to correct for the missing spaces. After a short while, those who use the computer extensively, particularly for word-processing, often find this very annoying----especially for us "hunt and peckers". Those who use the "touch typing" method may not find this a problem since they would normally make spaces by pressing the space bar nearer to its center, using one of their thumbs. However,the fix described below, at a cost of only a few pennies, may still be highly desirable.

The problem stems from the fact that neither of the two space bar electrical contacts, on the bottom about 1.25 inch from each end, make contact with the keyboard printed circuit board when the ends of the bar are pressed. Because of the peculiar mechanical design of the space bar assembly, instead of the bar moving straight downwards, regardless of where it is pressed, it has a tendacy to pivot axially around the hinge at the opposite end.As a result the pressed end of the bar itself "bottoms-out" against the keyboard subpanel before the space bar's carbon contact disc has a chance to reach the contact surfaces etched on the keyboard printed circuit board immediately below the carbon disc.

The bottom of the plastic space bar itself has a small stud protruding downward about 1.25 inch from each end. When the bar is pressed, the stud presses against a rubber membrane separator which contains a small captive tubular carbon disc floating slightly above a pair of concentric (but separated) interleaved spiral foil surfaces etched on the keyboard PCB. The two spirals constitute the two switch contacts which are shorted by the carbon disc when the spare bar is pressed. All keys on the keyboard are similiarly configured. When any key is pressed, its associated membrane section provides a slight "snap action", designed to give the "tactile" feel as the key is pressed. When the space bar was cast, these two studs should have been made a about 3/64 of an inch longer! This modification effectively increases the length of these studs, resulting in proper space bar action. The modification requires only two special thumbtacks, a bit of glue and an hour or so of ones time,----together with a high degree of care and patience during the process.

PROCEDURE

1. Place the computer upside down, front forward, on a soft cloth (such as a towel) spread upon a flat surface and remove the 7 round-head phillips screws from the bottom. For reassembly later, note that the three 1/2 inch screws are from the rear and that the four shorter 3/8 inch screws are from the front.

2. While holding the two case halves together, turn the computer right-side up, front forward and lift up the top section, front part first, until you have access to the 14-conductor keyboard ribbon cable. While holding up the front part of the case, gently remove the ribbon cable from its receptacle on the main printed circuit board (PCB) by pulling up with a slight "see-sawing" motion. For the time being, set aside the lower case containing the main PCB.

3. Turn the top section upside down, front forward and remove the 2 chrome plated grounding clips near each end of the ribbon cable top-section receptacle by sliding these clips toward the rear. Take note of how these clips were installed.

4. With the top section resting flat on its front end and top of the keyboard facing forward, from the rear press firmly on the ribbon cable receptacle while observing the adhesive-backed keyboard legend overlay. Note that as you press firmly on the receptacle,the edge of the legend overlay will begin to separate slightly from the top of the keyboard module---just above the "5", "6" and "7" key tops.

5. With a flat tool, such as a putty knife, carefully remove the overlay by prying it away from the case,--by starting at the top and continuing clockwise until you reach the center at the bottom. As you progress, place small pieces of wax paper under sections of the overlay that have been lifted to prevent it from adhering back on the case. Proceed VERY carefully to prevent damage to the overlay. Continue in a clockwise direction as necessary until the overlay is completely separated from the case (removing the overlay is the most tedious and time consuming part of the modification).After a portion on the right side has been lifted, the remainder of the overlay can be removed by pulling on it firmly as it separates from the top surface of the keyboard module. After the overlay has been removed,place a sheet of waxed paper over the adhesive side of the overlay to prevent the accumulation of dust and lint while it is exposed. Now lay the overlay aside until required for reassembly later.

6. With the top side of the case right-side up,front forward, remove the 5 recessed flat-head 1/2 inch phillips screws holding the keyboard module to the case. While holding the case and module together, turn the case upside down,remove the module and set aside the case. Here is where the real fun begins!

7. The following steps must be followed with EXTREME CAUTION to prevent internal parts (individual keytops, springs and spring keepers, etc.) from falling out of their proper positions in the keyboard module framework:

a. Turn the keyboard module upside down, front (space bar) forward, remove the 5 roundhead 5/16 inch screws from the bottom of the keyboard module and gently lift off the bottom PCB plate and its attached rubber cushion separator, WITHOUT disturbing the top section which contains all the keytops, springs and spring keepers mentioned above. At this stage, placement of these parts should be carefully studied and a rough sketch be made depicting placement of the 3 springs and their keepers----just in case (Heaven forbid!) you accidently bump the exposed module or inadvertantly turn it upside down (in which case all of the parts will fall out of the module framework!). Particular attention should be given to the layout of the 3 "U" shaped tension springs and their small slotted plastic keepers---the largest spring is for the "ENTER" keytop and the smaller springs are for the 2 "CAPS SHIFT" keys. Note that all three springs are secured by the plastic "keepers" which fit into slots located on the plastic ridge just below the bottom of each "U" spring. Also note that the rubber seperator and PCB both have alignment holes near each corner which will be used later during reassembly.

b. Note that the space bar is hinged near each end, has 2 studs protruding through holes in the module frame, and that each stud has a small longitudinal hole in it. Using a toothpick, fill each hole not quite full with a small droplet of Cyanocrylate type glue (i.e. "Crazy" or "Super" glue) and then thinly coat the top surface of the stud with the glue. Immediately place the prescribed type thumbtack (see footnote below) into each hole, pointed end inside the hole, and while pressing the space bar from the bottom, quickly center and level the tackheads before pressing them firmly down flat against the studs. The glue should set very quickly---within a minute or so.

* THUMBTACKS: small plastic coated head type, with approximately 3/64 inch head thickness. The type I use were manufactured by American Tack and Harware Co. (AMTAC), type 323R, available from local MOTTS variety stores (package of 40 for 59 cents). The author will mail a supply these tacks, at no cost, upon receipt of an SASE. Mail to:

FRANK H. BOULDIN (W5GAA)
605 Candlewood Road
Fort Worth, TX 76103

c. If, in addition to the space-bar, you have been experiencing erratic or intermittent keystroke action, such as binding or sticking keys---and/or failure of particular keys to register properly when they are pressed,then NOW is the time for corrective action! In most instances, such malfunctions probably occur because of foreign matter (such as grime, dirt, moisture, etc.) that has migrated into the inside of the keyboard module through the narrow openings surrounding the space-bar and all keytops. If such is suspected,then separate the rubber separator mat from the keyboard PCB and visually inspect for signs of such foreign matter on the foil side of the PCB; on both sides of the rubber mat and the carbon discs embedded therein; and on the underside of the top side of the computer case. Where ever present, use a small, soft,lint-free cloth with denatured alcohol to remove all deposits of any foreign matter that may exist inside the keyboard module. In addition, if there are any signs of corrosion on the PCB contact surfaces, use a "Q-Tip" to coat all such surfaces (and corresponding carbon discs) with a light application of TV Tuner Cleaner,such as Radio Shack Cat. Nr. 64-2315. Before replacing the rubber mat back upon the PCB, be sure you have not left any lint on the PCB, either side of the rubber mat, or the carbon discs. If a source of filtered air is available, a blast of air upon all components would help assure clean surfaces.

d. After making sure that all the keys, springs and their keepers are still in their proper place,lay the PCB and its attached rubber separator back over the module in their original position-----taking care that the 4 alignment holes at the corners are mated with their small alignment pins cast in the module frame. Secure with the 5 screws removed previously.

e. Before reinstalling the keyboard module assembly in the case, and if an ohm-meter is available, proper operation of the modified space bar can be confirmed by checking for continuity between the "KB0" and "A15" conductors at the exposed end of the ribbon cable when the space bar is pressed. With the keyboard module topside up, space bar to the front, and the 14-conductor ribbon cable protruding outwards from the rear, "KB0" is the second conductor from the left and "A15" the extreme right conductor of the cable. Continuity must also show when the "BREAK" key is pressed since its contacts are in parallel with the space bar contacts.

8. After reinserting the 2 grounding clips removed in step 3 above, reassemble the keyboard module back into the top half of the case. Reconnect the ribbon cable and reassemble the the two halves of the case, following in reverse order the disassembly sequence outlined above.

9. Finally,remove the temporary waxed cover over the adhesive side of the keyboard legend overlay and carefully replace the overlay over the keyboard in its original position. After making sure it is aligned properly, press down on the overlay to secure it firmly to the keyboard surface. Use the soft eraser of a pencil to assist in tight places around keytops.

10. Good Luck and HAPPY SPACE-BAR! FHB 10/3/85

INTEGRATED SOFTWARE FOR THE TIMEX?

by

Kraig D. Pritts-KA2LHO

Integrated software can be very convenient to use. If you have ever used the PFS Series for the Apple or the Assistant Series for the IBM computers then you know what I am talking about by integrated software. There are actually two types of software integration: (1) true integrated software in which many programs are found on one disk and all programs and files can be accessed directly from the keyboard. Examples of this type of integration include Radio Shack's Deskmate, as well as Apple's Appleworks and Lotus 1-2-3 for the IBM. (2) Another type of "integration" is actually file-sharing between several different programs. The PFS and Assistant Series mentioned earlier are examples of this latter form of software integration.

Integration of any type has not been available up to this time for the Sinclair computers (with the exception of the new QL) and we have had to look longingly to other systems for this benefit of computing. Two new programs which help to fill this gap are now available from Curry Computer (P.O. Box 5607, Glendale, AZ 85312). The programs, called tBUFF and vBUFF, allow the TS 2068 user to share data between various programs and make use of that data in each. This article is not meant to be a review, since I as the author would be accused of biased reporting, but instead it is meant to let everyone become aware of the great potential found in our present software and hardware.

tBUFF is a utility program which allows you to take any data that has been downloaded into MTERM II smart telecommunications software and save it as a text file which can then be loaded into the Tasword II word processor. The file is viewed by Tasword as any other text file and thus should be compatible with either the 2068 or the Spectrum version of Tasword. After the file has been loaded into the word Processor you may alter the text, reformat it, merge it into another text file, print it onto any Tasword compatible printer, or save it for future reference. tBUFF provides the user with many features such as automatic division of the MTERM file into two text files if it is too large to fit into Tasword as one file and choice of saving files to either tape or A&J Microwafers.

vBUFF is a sister utility program which reformats the popular VU-CALC spreadsheet program by Psion and allows its data to be saved as a Tasword text file. This file can be loaded into the word processor, edited, printed, saved for future report references, or included in printed reports as desired by the user. vBUFF is merged into the VU-CALC BASIC program initially and the entire program is resaved as a working copy onto a new cassette. Spreadsheet operation is not affected in any way by the presence of vBUFF and the new utility is accessed via the regular QUIT menu option of the original program.

FOR PRICE AND DETAILS ON tBUFF or vBUFF CONTACT CURRY COMPUTER

R.J.McMahan Rt 3 Bx 155 Hayden, Id 83835

CW SEND -- TIMEX 2K

PX Program No. 81

by R.J.McMahan K7CD

Though I designed this program for repeating CQ's, it can be used for long statements like giving your QTH, name, WX, etc., things which are the same every QSO, and it could also be used to transmit a letter at a time, a word, or a line, or more. It transmits when you ENTER the message. If you are in the REPEAT mode, it will wait through the spaces at the end and then repeat. If you are QSK you will hear an answer, press the BREAK key and talk with them by key (telegraph key). If you put some other letter besides R into the REPEAT request, the message will send once and return for a new message. You can clear the previous message if in R mode, by doing the following in Calculator mode (no line number). LET A$ = "" ENTER. GOTO 90 ENTER. Comma is .M.I.M, period is .A.A.A, etc. Dot reduces spaces.

This program will not work in SLOW mode. FAST is the F key, shifted then ENTER. If you RUN, you will wipe out the string, which tells the computer which dots and dashes to send. Use GOTO 20 ENTER. You will see big black lines on the screen, length of time on the screen equal to the dots and dashes, or you can plug a small amplifier like the Radio Shack Computer amplifier (about $13), into the MIC jack on the computer and you will hear the code. Further, if the amplifier output is fed to a low resistance diode and filter, mine runs a small reed relay which runs the Omni A quite well. RF feed-back is a problem on all interfacing on higher frequencies, but can be overcome. I used a transistor with base hooked to collector for my diode to get low resistance diode. Electronic keyers usually put less than 5 volts on the key and less than 20 ma., so they are TTL compatible. No other power supply is required if yours works like mine. I think the relay system would key directly most transmitters.

The program is in three parts. Lines 10 etc. are used in each part. Don't worry about overlaying those lines if you follow the instructions. The first part puts the machine language into 1 REM, where it stays. The second part puts the data in string. Third part is the BASIC program.

PART 1 (Put machine lanhuage into 1REM)


```
 1 REM ..................... (20 dots)
10 FOR N = 16514 TO 16533
20 INPUT A
30 POKE N,A
40 PRINT N, PEEK N
50 NEXT N
```

RUN ENTER

ENTER each of the following numbers. Where there is a space, you ENTER.

62 255 6 15 211 255 16 252 201 219 255 205 130 64 6 23 16 254 201 STOP ENTER

PART 2 (2 for dash, 1 for dot into A$(N) string array.)

```
10 DIM A$(37)
20 FOR N = 1 TO 37
30 INPUT A$(N)
40 SCROLL
50 PRINT N, A$(N)
60 NEXT N
```

RUN ENTER

ENTER each of the following numbers. Space means ENTER.

22222 12222 11222 11122 11112 11111 21111 22111 22211 22221 12000 21110
21210 21100 10000 11210 22100 11110 11000 12220 21200 12110 22000 21000
22200 12210 22120 12100 11100 20000 11200 11120 12200 21120 21220 22110
STOP ENTER

As you can see, 12000 is the letter A, dot dash. In the Timex, 28 is zero, 38 is A, so the string array is arranged so that if we subtract 27 from the number representing a letter, that letter will be just that many spaces from the start of A$(N). A will be 11th in the series. We will have a dash three times as long as a dot.

Now you have 1 REM with machine language and A$(N) with conversions. If you RUN, you will lose A$ entirely, so just GOTO 20 when we have finished. We will now overlay all lines but 1 REM with the BASIC program.

PART 3 (Main Basic Program)


```
 10 REM DO NOT RUN. USE GOTO 20. FAST MODE ONLY.
 20 PRINT "SPEED IN WPM?"
 30 INPUT S
 40 LET S = ((1/S)**1.45)*1000 (** is shift H. Speed adjust)
 50 POKE 16529, (S/2)
 60 PRINT """R"" FOR REPEAT"   (Use shift Q for double quotes)
 70 INPUT F$
 80 IF F$ = "R" AND E$ <> "" THEN GOTO 110
 90 PRINT "MESSAGE?"
100 INPUT E$          (Your message)
110 LET D$ = E$       (We will work with D$)
120 FOR P = 1 TO S    (Delay)
130 NEXT P
140 GOTO 170
150 POKE 16528, 201 (Skip some delay for punctuation)
160 LET Q = 1         (This is punctuation)
170 LET N = CODE D$ - 27  (Take first character, subt 27)
180 LET D$ = D$(2 TO )    (Drop first char.)
190 IF N = -27 THEN GOTO 300  (Get delay for space bet char)
200 IF N = Ø THEN GOTO 150  (27 is period, punct signal)
210 LET B$ = A$(N)
220 FOR M = 1 TO 5     (Note M, not N)
230 LET B = CODE B$-28   (Gives B location of dot/dash for ltr)
240 IF B<=Ø THEN GOTO 280
250 POKE 16528,6   (Not punctuation, reinstate delay)
260 GOSUB 3*B*100+50   (Compute jump)
270 LET B$ = B$(2 TO )  (Drop first char)
280 NEXT M
290 IF Q = 1 THEN GOTO 310  (Punct finished, clear)
300 GOSUB 500
310 LET Q = Ø
320 IF D$ = "" AND CODE F$ <>55 THEN GOTO 90  (55 is R)
330 IF D$ = "" THEN GOTO 110   (Refill with message to repeat)
340 GOTO 170
350 POKE 16517, S/3
360 FOR N = 1 TO S/3
370 LET J = USR 16523
380 NEXT N
390 RETURN
500 FOR Z = 1 TO S
510 NEXT Z
520 RETURN
650 POKE 16517,S
660 FOR N = 1 TO S
670 LET J = USR 16523
680 NEXT N
690 RETURN
```

73, W4GHV & K5XY

QZX presents the best software & hardware projects available for the radio amateur. While the contents are believed to be accurate, no warranty is extended on any program or project. No investigation has been made of the claims or reputation of any advertiser. It would be greatly appreciated if all correspondance requiring an answer would be accompanied by a self-addressed stamped envelope (SASE). Copyright by QZX, 1984. All rights reserved, photocopying by permission only.

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glad to have you back
We have published all the speech and digital measurement articles we have received. I agree that it is an interesting area.

73
K5XY

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